

REMARKS

Claims 22-42 are present in this application. By this Amendment, the specification and claims 23, 25, 27, 35, 40 and 41 have been amended. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

With reference to the Office Action, in paragraph 1, the specification was objected to for lacking antecedent basis for the claimed subject matter. In particular, the Office Action contends that "tips projected from the rear of the second cartridge" from claim 34 is not supported by Figure 5. To the contrary, however, as described in the specification, the first and second detection projections extend through an opening 11 in the cartridge case 2. See also, for example, Figures 19 and 21 and the specification at page 40, lines 1-5. Withdrawal of the objection is thus respectfully requested.

In paragraph 2, the drawings were objected to for allegedly failing to show opening 161a as described in the specification. Opening 161a, however, is shown in, for example, Figure 10. Withdrawal of the objection is requested.

The drawings were further objected to in paragraph 3 with respect to features defined in claim 23 and claim 35. These features, however, have been clarified in the claims, and Applicants submit that the now claimed subject matter is clearly shown in the drawings. Withdrawal of the objection is requested.

The formality noted with respect to claim 27 has been corrected by this Amendment.

Claims 25, 27, 28, 41 and 42 were rejected under 35 U.S.C. §112, second paragraph. By this Amendment, the claims have been amended to maintain proper antecedent basis. Additionally, with respect to claim 41, the phrase with respect to the "relatively moved" record paper has been deleted. Moreover, claim 41 has been amended to clarify that the waste-ink holding member is placed in one of the first ink cartridge and the second ink cartridge having the smallest value resulting from dividing a volume of ink in each of the first and second ink bags by the number of nozzles of the ink nozzle group corresponding to the respective ink bag. Applicants respectfully submit that an express comparison is not necessary in the claims since such a comparison is inherent by specifying the "smallest value" resulting from the division.

Withdrawal of the rejection is thus respectfully requested.

Claims 22-24, 26, 27, 30, 31, 33 and 40 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 4,695,851 to Terasawa. This rejection is respectfully traversed.

With respect to independent claim 22, the Office Action contends that "when the first case and the second case are joined, the outlets of the first and second ink bags are pressed against each other by the first case and the second case," referring to Figure 4 in Terasawa. The Applicants respectfully traverse this contention. With reference to Figure 4 in Terasawa, the respective outlets of the ink bags 32 are shown surrounding the needles 52 directly adjacent the rubber member 34. From this Figure, it is clear that these outlets are in no manner "pressed against each other" as claimed. Since anticipation

requires that each and every element of the claimed invention be disclosed in the prior art, Applicants respectfully submit that the rejection of claim 22 is misplaced.

With respect to independent claim 40, without conceding the Office Action's characterization of the Terasawa patent, the structure of the joint mechanism that detachably joins the plurality of ink cartridges has been clarified, reciting that the joint mechanism comprises at least one insertion projection engageable with a corresponding at least one insertion hole. Terasawa lacks any such joint mechanism, and Applicants thus respectfully submit that the rejection of claim 40 is also misplaced.

With respect to the dependent claims, without conceding the characterizations of the Terasawa patent in the Office Action, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim. In addition, claim 26 defines a waste-ink holding member for storing waste ink poured therein from the outside thereof, wherein the waste-ink holding member is attached to the second case. The Office Action on page 5 contends that the "second case" in Terasawa is a top wall of the cartridge tank 30. With reference to Figure 4 in Terasawa, it does not appear that the waste ink container 36 is attached to this portion of Terasawa's ink cartridge 30. Still further, claim 30 recites that the first case forms a first ink cartridge for housing the first ink bag and the second case forms a second ink cartridge for housing the second ink bag. As discussed above, the Office Action contends that the "second case" in Terasawa is constituted by the top wall of ink cartridge 30. Certainly, the top wall itself cannot form an ink cartridge as claimed. Even further, claim 33 recites that the second

ink cartridge comprises a recess into which the first ink cartridge can be fitted in the thickness direction. In this context, since the "second case" alleged in Terasawa cannot possibly form the second ink cartridge as claimed, the second ink cartridge comprising a recess as set forth in claim 33 is also lacking in the Terasawa patent.

Reconsideration and withdrawal of the rejection are thus respectfully requested.

Applicants acknowledge with appreciation the indication of allowable subject matter in claims 25, 28, 29, 32, 34-39, 41 and 42.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the claims are patentable over the art of record and that the application is in condition for allowance. Should the Examiner believe that anything further is desirable in order to place the application in condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Prompt passage to issuance is earnestly solicited.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "**Version With Markings To Show Changes Made.**"

NAKAZAWA et al.

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Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

The paragraph beginning at page 9, line 16:

FIG. 1 is an external perspective view of an ink cartridge with a partition plate according to an embodiment of the invention when the ink cartridge is viewed from the top;

The paragraph beginning at page 10, line 21:

FIG. 18 is an external perspective view of a split-type ink cartridge of another embodiment of the invention when the ink cartridge is viewed from the top;

The paragraph beginning at page 10, line 25:

FIG. 20 is a longitudinal sectional view of the ink cartridge in FIG. 18;

The paragraph beginning at page 11, line 8:

FIG. 25 is a longitudinal sectional view of the first ink cartridge shown in FIG. 18;

The paragraph beginning at page 11, line 15:

FIG. 29 is a schematic configuration drawing to show ink supply and collection channels of an ink jet printer using the ink cartridge in FIG. 18 [asan] as an ink supply source.

The paragraph beginning at page 13, line 10:

Next, the cartridge case 2 will be described. The cartridge case 2 includes a case main body 12 open on its top (i.e., having opening 13) and a case lid 14 detachably covering the upper opening 13. The front 15 of the cartridge case 2 is formed with ink

supply needle insertion holes 16 and 17, and a waste-ink collection needle insertion hole 18. The bottom of the cartridge case 2 is formed with the above-described opening 11. If the ink bag 3(1), 3(2) contained in the cartridge case 2 becomes empty of ink, the detection projection 9 projects from the opening 11 so that it can be detected when the ink runs out. Three circular holes 19, 20, and 21, are made in the cartridge case front 15. [the] The holes 19, 20, 21, are used for positioning the cartridge 1 when it is placed in a cartridge placement part formed in an ink jet printer, as described later.

The paragraph beginning at page 16, line 4:

Next, the partition plate 4, which is housed in the cartridge case 2, comprises a rectangular main body portion 61 and a rectangular frame portion 62 rising upward from the four peripheral margins of the main body portion 61. The frame portion 62 is dimensioned for allowing the frame portion 62 to drop through the upper opening 13 and move along the inner surface of the case main body 12 in [aslidable] a slidable state. Upper end face portions 63, at the four corners of the frame portion 62, are at higher positions than other portions of the partition plate. The four corners of the frame portion 62 abut the outer frame end face (partition plate clamp face) 39 of the case lid 14 when the lid is attached to the case main body 12.

The paragraph beginning at page 20, line 17:

In this embodiment, the case lid 14 — formed with the ink outlet press part 91 having the circular arc face 95 — presses the ink outlet parts 7 and 7 so that they are stacked up and down on each other against the bottom plate portion of the case main body

12 from the upper side. Therefore, the ink outlet parts 7 and 7 can be reliably fixed [topredetermined] to predetermined positions.

The paragraph beginning at page 20, line 24:

For example, red ink may be stored in the ink bag 3(1) and [blackink] black ink may be stored in the ink bag 3(2). To use the ink cartridge of this embodiment with an ink [jetrecorder] jet recorder, as described later, usually black ink is used for printing and the portion to be highlighted is printed in red ink, whereby it is made possible to print in a lively style. For example, when the balance becomes minus, the bankbook is printed in red ink, whereby the bankbook owner can be warned of the balance due.

The paragraph beginning at page 23, line 15:

The case main body 112 includes a rectangular bottom plate portion 122, a front wall portion 123, two side-wall portions 124 and 125, and a rear wall portion 126. [the] The wall portions are formed as side plate portions rising upward from four peripheral margins of the bottom plate portion 122. Further, the case main body 112 has an opening 113 on its top.

The paragraph beginning at page 24, line 18:

Each of the partition plates 104(1) and 104(2) housed in the case main body 112 comprises the above-mentioned bottom plate portion 161 and a rectangular frame portion 162 rising upward from the four peripheral margins of the bottom plate portion 161. The frame portion 162 is dimensioned to allow the frame portion 162 to drop through the opening 113 of the case main body 112 and along the inner surface thereof in [aslidable] a

slidable state. Upper end face portions 163, at the four corners of the frame portion 162, are at higher positions than are other portions of the frame portion. Also, the end face portions 163 about the outer frame end face (partition plate clamp face) 139 of the case lid 114 when it is attached to the case main body 112.

The paragraph beginning at page 29, line 9:

FIG. 12 is a schematic representation to describe an ink end detection mechanism contained in the ink jet printer 200 of this embodiment. As shown in the figure, an ink end detector 215 is installed in the cartridge placement section 203, and a transfer plate 216 is fixed to the ink end detector 215 with an adhesive, or the like. If the remaining amount of red ink in the ink bag 3(1) is decreased to a predetermined amount, or if the remaining amount of black ink in the ink bag 3(2) is decreased to a predetermined amount, the detection projection 9(1) formed on the detection plate 8(1) or the detection projection 9(2) formed on the detection plate 8(2) presses the transfer plate 216 thereby turning on the ink end detector 215. The transfer plate 216 is a thin plate having rigidity; here, an acrylic [plate1] plate 1 mm thick is used. The ink end detector 215 is a switch of the mechanical contact type.

The paragraph beginning at page 31, line 10:

In the controller, numeral 229 denotes measuring means for measuring the amount of ink jetted from the ink jet head 209, and the amount of ink consumed as waste ink, based on a command from print operation control means 224. The amount of ink jetted from the ink jet head 209 is calculated from the number of times each nozzle has been

driven by the head drive means 225, for example. The amount of ink consumed as waste ink [iscalculated] is calculated from the number of times the waste ink pump 214 has been driven, for example.

The paragraph beginning at page 33, line 7:

With an ink jet printer wherein one ink bag is housed in an ink cartridge and one ink cartridge is placed for each ink, the volume of a cartridge placement section of the ink jet printer grows. And when ink is used up, it is necessary to replace the ink [cartridgefor] cartridge for each ink so that the operator of the ink jet printer is inconvenienced. Further, the operator of the ink jet printer needs to have an ink cartridge on hand for each type of ink used.

The paragraph beginning at page 37, line 14:

Referring to the figures, an ink cartridge 400 includes a first ink cartridge 500 and a second ink cartridge 600. [the] The ink cartridge 500 is shaped like a flat rectangular parallelepiped in which a first ink bag 401(1) and a waste-ink absorption material 402 are housed. Similarly, the second ink cartridge 600 is shaped like a flat rectangular parallelepiped in which a second ink bag 401(2) is housed. The first and second ink cartridges detachably are joined in a state in which they are overlaid on each other.

The paragraph beginning at page 50, line 17:

Also in this embodiment, the two guide shafts 718 and 719 horizontally project into the cartridge placement section 703. Further, the guide shaft insertion holes 611 and 612, into which the guide shafts 718 and 719 can be inserted, are made only in [thefront]

the front end face of the second ink cartridge 600. Therefore, if the ink cartridge 400 is placed in the cartridge placement section 703 in an opposite direction left to right, the tip of the guide shaft 718, 719 abuts the front end face or the rear end face of the ink cartridge 400. Thus, the ink cartridge 400 is prevented from being placed in the cartridge placement section 703 in an erroneous position.

The paragraph beginning at page 51, line 7:

The waste ink collection channel prevents the detrimental effect [ofleaking] of leaking out waste ink to the outside. Of course, if two cartridge presence/absence sensors for detecting the first and second ink cartridges 500 and 600 are attached, when the operator forgets about placing the black ink cartridge 600, he or she can be informed of the fact.

The paragraph beginning at page 52, line 19:

The partition plate placed between the ink bags is mounted in [aslidable] a slidable state relative to the cartridge case, and is sandwiched between the case main body and the case lid forming the cartridge case, whereby the installation position of the partition plate is defined. Therefore, the partition plate can be easily installed and removed, whereby it is easy to disassemble and assemble the ink cartridge when the ink cartridge is recycled, and the like.

The paragraph beginning at page 54, line 13:

Therefore, the amount of ink remaining when [theink] the ink end is detected can be reduced, so that the amount of wasted ink can be decreased. Since the detection plate

can be moved in connection with the deformation of the ink bag as the amount of ink remaining decreases, ink end detection with good accuracy can be accomplished.

IN THE CLAIMS

23. (Amended) The ink cartridge as claimed in claim 22, wherein the first case comprises a bottom plate portion and a side plate portion, the first case having [with] an opening on a top thereof for housing the first and second ink bags, [and] wherein the second case covers the opening of the first case.

25. (Amended) The ink cartridge as claimed in claim 24, wherein the partition plate is detachable in a direction substantially perpendicular to the bottom plate portion along the side plate portion, and wherein each of the first case and the second case comprises a partition plate clamp face such that the partition plate is clamped by the partition plate clamp [faces] face of the first case and the partition plate clamp face of the second case for defining the position of the partition plate.

27. (Amended) The ink cartridge as claimed in claim 23, wherein each of the first case and the second case comprises an ink outlet clamp face such that the ink outlets [is] are clamped by the ink outlet clamp faces for defining the positions of the ink outlets, and wherein at least one of the ink outlet clamp faces is elastically displaceable.

35. (Amended) The ink cartridge as claimed in claim 34, wherein the first ink cartridge [is formed in] comprises a side portion with a protection guide surrounding the first detection projection.

40. (Amended) An ink cartridge comprising:

a plurality of ink cartridges including a first ink cartridge for housing a first ink bag storing first ink, and a second ink cartridge for housing a second ink bag storing second ink of a different color than the first ink, the ink cartridges being detachably joined by a joint mechanism, wherein the joint mechanism comprises at least one insertion projection engageable with a corresponding at least one insertion hole.

41. (Amended) An ink jet printer comprising:

[an] a primary ink cartridge having a plurality of secondary ink cartridges including at least a first ink cartridge for housing a first ink bag storing first ink, and a second ink cartridge for housing a second ink bag storing second ink of a different color than the first ink, wherein one of said first and second ink cartridges further includes a waste-ink holding member for storing waste ink poured therein from the outside thereof, the plurality of secondary ink cartridges being formed in one piece by a joint mechanism for detachably joining the plurality of secondary ink cartridges;

a placement section in which said primary ink cartridge detachably is placed; and

an ink jet head comprising a plurality of ink nozzle groups including a first ink nozzle group for ejecting the ink in the first ink bag of said primary ink cartridge placed in said placement section, and a second ink nozzle group for ejecting the ink in the second ink bag of said primary ink cartridge placed in said placement section, [said ink jet head being adapted to execute any desired printing on record paper relatively moved]

wherein the waste-ink holding member is placed in one of the first ink cartridge and the second ink cartridge having the smallest value resulting from dividing [the amount] a volume of ink in each of the first and second ink [bag housed in each ink cartridge] bags by the number of nozzles of the ink nozzle group corresponding to the respective ink bag.